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ABSTRACT

This instructional unit on computer literacy is intended for use as a 9-week course meeting five days per week for 50-minute class periods. If tied to a 9-week course in keyboarding or combined with additional materials on programming or software applications, it could also be expanded into a semester course. The following topics are covered in the individual chapters: the role of computers in society; ways in which computers affect society (historical development of computers, their effects on quality of life, economic effects of computers, concerns arising from computer use, and rapid technological changes in business); the way in which computers work (system components, binary code, kinds of computers, and differences between hardware and software); procedures for using computers (operation of a computer system, techniques in analyzing and solving a problem through flowcharting, procedures for writing and executing simple programs coded in BASIC, introduction to other languages, and software applications); and career opportunities in areas using computer technology. Each chapter includes some or all of the following: objectives, an outline of the section's general content, teacher and student learning activities, and resources. A list of print and nonprint references concludes the guide. (MN)

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COMPUTER LITERACY: AN INSTRUCTIONAL UNIT

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COMPUTER LITERACY

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1985

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OBJECTIVES

The student who has successfully completed this course will be able to:

1. State what computers can do and what computers cannot do.
2. List factors which lead to computer use and factors which limit or restrict computer use.
3. Assess the increasing dependence of our society on computers.
4. Trace the historical development of the computer.
5. Discuss how computers are affecting the quality of our lives.
6. Describe how the economy is affected by computers.
7. Recognize that computers may be used to commit a variety of serious crimes.
8. Define and use vocabulary needed for the computer age.
9. Describe changes brought about in our economic and business system by computers.
10. List the components of a computer system.
11. List different kinds of input/output devices of a computer system.
12. Describe the difference between hardware and software.
13. Describe how the computer processes data.
14. Demonstrate how to turn on, boot, and operate the computer.
15. Demonstrate how to load, list and run programs.
16. Locate and use special keys on the computer.
17. Analyze and solve a problem through flowcharting.
18. Write and execute programs coded in BASIC language.
19. List advantages and disadvantages of the BASIC language.
20. Recognize major computer languages.

21. Demonstrate how to load and run computer software applications for personal and business use.

22. List careers and vocations utilizing computer technology.

23. State the educational requirements for careers in the computer age.

COMPUTER LITERACY

Purpose

The computer age has arrived, and it is the purpose of this course to make students knowledgeable about the profound effect computers are having on the daily lives of every citizen. All students moving into this computerized society must know what a computer is, what it can and cannot do, how to make it work, and how it is affecting their world. Students who have attained this knowledge will not be threatened by the computer but will be able to function with confidence in a technological society.

Recommended hours of instruction

This course has been designed as a nine-week course, five-day week with 50-minute class periods. However, this course could be tied to nine weeks of Keyboarding to make a semester course, or Unit IV could be expanded with more programming or software applications to make a semester course.

COURSE CONTENT

I. COMPUTERS IN SOCIETY

- A. What is a computer?
- B. What computers can do
- C. What computers cannot do
- D. Reasons computers are used
- E. Reasons that limit or restrict the use of computers
- F. The increasing dependence of society on computers

II. HOW COMPUTERS AFFECT SOCIETY

- A. Historical development of computers
- B. The effect of computers on the quality of our lives
  - 1. Computers can both personalize and impersonalize communication
  - 2. Impact on the way people live, work, and play
- C. Economic effect of computers on our lives
  - 1. Computers create new job opportunities
  - 2. Computers decrease employment opportunities
- D. Concerns arising from computer use
  - 1. Computers used to commit serious crimes
    - a. Limited procedures for detecting computer-based crime
  - 2. Potential for privacy invasion through use of data banks
- E. Rapid technological changes in business
  - 1. Electronic office
    - a. Information processing
    - b. Electronic mail
  - 2. Computerized factories
    - a. Robotics
  - 3. Supercomputers of the future
    - a. Fifth generation computers
    - b. Artificial intelligence
    - c. Voice recognition
    - d. Interactive television

III. HOW COMPUTERS WORK

- A. Components of a computer system
  - 1. Central processing unit
    - a. Arithmetic/logic
      - (1) Microprocessor
    - b. Memory
      - (1) ROM, RAM, PROM, EPROM
    - c. Control
  - 2. Input devices
    - a. Keyboards

b. Punched cards
c. Tape
d. Disks
e. Readers

3. Output devices
a. Display screens
b. Printers
c. Punched cards
d. Tapes

4. Auxiliary storage systems
a. Magnetic tapes
b. Floppy disks
c. Hard disks
d. Microfiche

5. Networks

B. Binary code
1. Bit, byte, register, and word
2. Definition of "k"

C. Kinds of computers
1. Micros, minis, mainframes, and "monsters"
2. Digital/analog

D. Difference between hardware and software
1. Rapid growth of hardware since 1940
a. Dramatic decrease in size and cost of hardware
b. Continued increase in memory

IV. HOW TO USE COMPUTERS

A. Operation of a computer system
1. Getting to know your system
2. Special keys
3. Troubleshooting
4. Shutting down the system
5. Care of disks

B. Analyzing and solving a problem through flowcharting
1. Template
2. Basic systems flowchart symbols
3. Specialized systems flowchart symbols
4. Systems flowchart
5. Program flowchart symbols
6. Simple problem flowchart

C. Writing and executing simple problems coded in BASIC language
1. System commands
2. Program commands
3. Arithmetic operations
4. Parenthesis
5. Types of data
6. Data terminator
7. Variable names
8. Reserved words

9. Equations
10. Loop
11. Branches
12. Relational operators
13. Documentation sheet
14. Headings
15. Vertical separation of output information
16. Horizontal placement of output information

D. Introduction to other languages
1. COBOL
2. FORTRAN
3. PASCAL

E. Software applications
1. Word processing
2. Spreadsheet
3. Database management
4. CAI, CAD, CAM

V. CAREER OPPORTUNITIES UTILIZING COMPUTER TECHNOLOGY

A. Computer careers
1. Computer operators
2. Computer programmers
3. System analysts
4. Word processors
5. Data processors

B. Education and career planning for the future
1. Skills required
2. Job market opportunities
3. Courses needed

UNIT ONE - COMPUTERS IN SOCIETY

Unit One--COMPUTERS IN SOCIETY

I. Objectives

At the end of this unit each student will be able to:

A. State what a computer is
B. List three things a computer can do
C. List three things a computer cannot do
D. List three factors which lead to computer use
E. List three factors which limit or restrict computer use
F. Assess the increasing dependence of our society on computers

II. General Content

A. What a computer is
B. What computers can do
C. What computers cannot do
D. Factors which lead to computer use
E. Factors which limit or restrict computer use
F. Increasing dependence of our society on computers

III. Activities

A. Teacher
    1. Lecture
    2. Discussion
    3. Audio-Visual aids
        a. Chalkboard
        b. Overhead transparencies
        c. Film
        d. Slide/tape presentations
        e. Videotape
    4. Assignments
    5. Evaluation
B. Student
    1. Take notes on lectures
    2. Complete worksheets and/or other assignments
    3. Complete readings assigned by instructor
    4. View and discuss film, slide/tape, and videotape presentations
    5. Keep a notebook of new vocabulary words
    6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, South-Western Publishing Co., 1982.

2. Computer Fundamentals for an Information Age, Shelly/Cashman, Anaheim Publishing Co., 1984.
3. Computer Literacy: Problem-Solving with Computers, Horn/Poirot, Sterling Swift Publishing Co., 1981.
4. Computers and Information Technology, Daggett/Badrkhan/Kruse, South-Western Publishing Co., 1985.
5. Computers in Action, Second Edition, Spencer, Hayden Book Co., Inc., 1978.
6. Computers Today, Sanders, McGraw-Hill Book Co., 1983.
7. Help with Computer Literacy, Atkinson, Houghton Mifflin Company, 1984.
8. Introduction to Data Processing, Third Edition, Robichaud/Muscat/Hall, McGraw-Hill Book Co., 1983.
9. Learning About Computers, Cathcart/Cathcart, Gage Publishing Limited, 1984.
10. Scholastic Computing: An Introduction to Computers, Roberts, Scholastic Inc., 1984.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Computers, Spencer, Camelot Publishing Co., 1978.
2. Slides/Tapes:
   "Understanding Computers," Prismatron Productions, Inc., 1982.
   "The Micro Revolution," Prismatron Productions, Inc., 1982.
   "Microcomputers," Prismatron Productions, Inc., 1982.
3. Film:
   "Computers--The Friendly Invasion," Disney, 1982.
4. Videotape:
   "Artists in the Lab," Nova, Time Life, 1982.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit One--Computers in Society

Part A - What a computer is
Part B - What computers can do
Part C - What computers cannot do

I. Objectives

At the end of these parts each student will be able to:

A. State what a computer is
B. List three things a computer can do
C. List three things a computer cannot do

II. General Content

A. Computer as an electronic tool
   1. Accepts information
   2. Processes information
   3. Produces results by high-speed calculations
B. Things a computer cannot do
   1. Think
   2. Have emotions
   3. Produce results unless the steps have been provided by humans

III. Activities

A. Teacher
   1. Lecture
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies
      c. Slide-tape presentation
   4. Assignments
   5. Evaluation
B. Student
   1. Take notes on lecture
   2. Complete worksheets and/or other assignments
   3. Complete readings assigned by instructor
   4. Start notebook of new vocabulary words
   5. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 1.1-1.5.

2. Computers and Information Technology, Daggett et al., pp. 11-25.
3. Computers in Action, Second Edition, Spencer, Ch. 1.
4. Computers Today, Sanders, pp. 1-8.
5. Help with Computer Literacy, Atkinson, pp. 76-83.
6. Scholastic Computing: An Introduction to Computers, Roberts, Ch. 1.

Audio-Visual

1. Overhead transparencies:
   Visual Masters for Teaching Computers, Spencer, pp. 5, 6, 7, 8, 9.
2. Slides/tapes:
   "Understanding Computers," Prismatron Productions.
   "The Micro Revolution," Prismatron Productions.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Keep a diary for one week to record daily experiences with computers.
2. Collect newspaper and magazine articles and pictures of computer applications.

Unit One--Computers in Society

Part D - Factors which lead to computer use
Part E - Factors which limit or restrict computer use
Part F - Increasing dependence of our society on computers

I. Objectives

At the end of these parts each student will be able to:

A. List three factors which lead to computer use
B. List three factors which limit or restrict computer use
C. Assess the increasing dependence of our society on computers

II. General Content

A. Factors which lead to computer use
   1. Speed
   2. Accuracy
   3. Small space needed for large amount of data
B. Factors which limit or restrict computer use
   1. Cost
   2. Resistance to change
   3. Lack of technologically trained workers
C. Elements of Society dependent on computers
   1. Business
      a. Office - data/word processing
      b. Retail - cash registers, UPC
      c. Manufacturing - Cad/Cam, robotics
   2. Government
      a. Tax collection
      b. Information gathering
      c. Space program
      d. Crime control
      e. Defense
      f. Preparing budget
   3. Medicine
      a. Records management
      b. Research
      c. Diagnostic
   4. Education
      a. Records management
      b. CAI (computer assisted instruction)
      c. Computer instruction
   5. Recreation/arts
      a. Sports
      b. Gambling/race tracks
      c. Arcade/video games
      d. Graphics/art
      e. Composing music

III. Activities

A. Teacher
1. Lecture
2. Discussion
3. Audio-visual aids
   a. Chalkboard
   b. Overhead transparencies
   c. Film
   d. Slides/tape
   e. Videotape
4. Assignments
5. Evaluation

B. Student
1. Take notes on lecture
2. Complete worksheets and/or other assignments
3. Complete readings assigned by instructor
4. View and discuss film, video-tape, and/or slide tape presentations
5. Continue adding new vocabulary words to notebook
6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, pp. 33-45.
2. Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 2.15-2.17.
3. Computer Literacy: Problem-Solving, Horn/Poirot, pp. 1-8, Ch. 4, Ch. 5.
4. Computers and Information Technology, Daggett et al., pp. 12-24.
5. Help with Computer Literacy, Atkinson, pp. 1-8.
6. Information Processing, Clark/Lambrecht, pp. 1-11.
7. Introduction to Data Processing, Third Edition, Robichaud et al., pp. 74-77.
8. Learning about Computers, Cathcart/Cathcart, Ch. 3.
9. Scholastic Computing: An Introduction to Computers, Roberts, Ch. 2.

Audio-Visual

1. Overhead transparencies:
   Visual Masters for Teaching Computers, Spencer, pp. 29-44.
2. Film:
   "Computers--The Friendly Invasion," Disney.

3. Slide/tape:
   "Microcomputers," Prismatron Productions.
4. Videotape:
   "Artists in the Lab," Nova, Time Life.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Continue to record in diary personal experiences with computer applications.
2. Continue to collect newspaper and magazine articles and pictures of computer applications.
3. Design bulletin board using collected newspaper and magazine articles and pictures.
4. Search through the yellow pages of the telephone directory for computer-related products and services in order to discuss in class the importance of the computer in the community.
5. Question parents and neighbors to find what new problems exist today that didn't exist 50 years ago and ask their opinion on how many of those problems are caused by technology.

Unit II--HOW COMPUTERS AFFECT SOCIETY

I. Objectives

At the end of this unit each student will be able to:

A. Trace the historical development of the computer
B. Discuss how computers are affecting the quality of our lives
C. Describe how the economy is affected by computers
D. Recognize that computers may be used to commit a variety of crimes
E. Describe changes in our economic and business system brought about by computers

II. General Content

A. Historical development of computers
B. The effect of computers on the quality of our lives
    1. Computers can both personalize and impersonalize communication
    2. Impact on the way people live, work, and play
C. The economic effect of computers in our lives
    1. Computers create new job opportunities
    2. Computers decrease employment opportunities
D. Concerns arising from computer uses
    1. Computers used to commit serious crimes
        a. Limited procedures for detecting computer-based crime
        b. Potential for privacy invasion through use of data banks
E. Rapid technological change in business
    1. Electronic office
        a. Information processing
        b. Electronic mail
    2. Computerized factories
        a. Robotics
    3. Supercomputers of the future
        a. Fifth generation computers
        b. Artificial intelligence
        c. Voice recognition
        d. Interactive television

III. Activities

A. Teacher
    1. Lecture
    2. Discussion
    3. Audio-Visual aids
        a. Chalkboard
        b. Overhead transparencies
        c. Films

d. Videotapes
e. Filmstrips

4. Speaker
5. Field trip
6. Assignments
7. Evaluation

B. Student

1. Take notes on lectures by instructor and/or speaker
2. Complete worksheets and/or other assignments
3. Complete readings assigned by instructor
4. View and discuss films, videotapes, and/or filmstrips
5. Add new vocabulary words to notebook
6. Participate in field trip
7. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, South-Western Publishing Co., 1982.
2. Computer Fundamentals for an Information Age, Shelly/ Cashman, Anaheim Publishing Co., 1984.
3. Computer Literacy: Problem-Solving with Computers, Horn/Poirot, Sterling Swift Publishing Co., 1981.
4. Computers and Information Processing with Business Applications, O'Leary/Williams, Benjamin/ Cummings Publishing Co., Inc., 1985.
5. Computers and Information Technology, Daggett/ Badrkhan/Krune, South-Western Publishing Co., 1985.
6. Computers in Action, Second Edition, Spencer, Hayden Book Co., Inc., 1978.
7. Computers Today, Sanders, McGraw-Hill Book Co., 1983.
8. Help with Computer Literacy, Atkinson, Houghton Mifflin Company, 1984.
9. Information Processing, Fourth Edition, Bohl, Science Research Associates, Inc., 1984.
10. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985.
11. Introduction to Computers and Data Processing, Shelly/Cashman, Anaheim Publishing Co., 1980.
12. Introduction to Data Processing, Third Edition, Robichaud/Muscat/Hall, McGraw-Hill Book Co., 1983.
13. Learning About Computers, Cathcart/Cathcart, Gage Publishing Limited, 1984.
14. Scholastic Computing: An Introduction to Computers, Roberts, Scholastic Inc., 1984.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Computers, Spencer, Camelot Publishing Co., 1978.
   Transparency Masters: Computer Fundamentals for an Information Age, Shelly/Cashman, 1984.
2. Films:
   "Captain is a Lady," Carousel, 1983
   "Computers: Challenging Man's Supremacy," Documents Assoc., 1976.
3. Filmstrips:
   "Computers: From Pebbles to Programs," Guidance Assoc., 1975.
   "Society and the Chips," Media Production Co., 1980.
4. Videotapes:
   Nova-"Computers, Spies, and Private Lives," Time Life, 1982.
   Adventure of the Mind Series, Iowa Public Television, 1984-85
   "Data Processing, Control, Design"
   "For Better or For Worse"

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit Two--How Computers Affect Society

Part A - Historical Development of Computers

I. Objectives

At the end of this part each student will be able to:

A. Place major computer developments on a timeline
B. List five people who were major contributors to the development of the computer
C. Describe the different generations of computers and the technology associated with each generation

II. General Content

A. Historical development of computers on a timeline
   1. Identification of several persons responsible for development of computers
   2. Description of early computers
   3. Characteristics of four generations of computers

III. Activities

A. Teacher
   1. Lecture
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies
      c. Filmstrips
      d. Films
   4. Assignments
   5. Evaluation
B. Student
   1. Take notes on lecture
   2. Complete readings assigned by instructor
   3. Complete worksheets and/or other assignments
   4. View film and/or filmstrip and discuss
   5. Continue adding new vocabulary to notebook
   6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, pp. 8-17.
2. Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 2.1-2.22.
3. Computer Literacy: Problem-Solving, Horn/Poirot, pp. 27-43.

4. Computers and Information Processing with Business Applications, O'Leary/Williams, pp. 67-68, 208-209, 279-282, 354-356.
5. Computers and Information Technology, Daggett et al., 33-67.
6. Computers in Action, Spencer, Ch. 2.
7. Computers Today, Sanders, pp. 34-39.
8. Help with Computer Literacy, Atkinson, pp. 8-14.
9. Information Processing, Fourth Edition, Bohl, pp. 1-17.
10. Information Processing, Clark/Lambrecht, Ch. 17.
11. Introduction to Data Processing, Third Edition, Robichaud et al., pp. 68-73.
12. Learning about Computers, Cathcart/Cathcart, Ch. 2.
13. Scholastic Computing: An Introduction to Computers, Roberts, Part A x - xxxi.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Computers, Spencer, pp. 44-63.
2. Film:
   "The Captain is a Lady," Carousel, 1983.
3. Filmstrip:
   "Computers: From Pebbles to Programs," Guidance Assoc., 1975.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Compile a timeline of people and their contributions to the development of the computer.
2. Write a newspaper article about one of the major contributors to the development of the computer to be published during the time the person lived. Imagine what people would have said about that person at that time.
3. Write short paragraphs on persons or topics related to the development of the computer as a library assignment. The list would be prepared by the instructor with the help of the librarian.
4. Have students search through old magazines or newspapers from the year they were born and list any computer-related information they can find.

Unit Two--How Computers Affect Society

Part B - The effect of computers on the quality of our lives
Part C - The economic effect of computers on our lives

I. Objectives

At the end of these parts each student will be able to:

A. Discuss in what ways computers are affecting the quality of our lives
B. Describe ways in which the economy is affected by computers
C. List new job opportunities resulting from use of computers
D. Describe how use of computers decreases some job opportunities and contributes to unemployment

II. General Content

A. Computers both personalize and impersonalize communication
    1. Personalized "junk" mail
    2. Impersonalized communications for customers
B. Computers affect all areas of life
    1. Work
    2. Recreation
    3. Home
C. Economic effect of computers
    1. Computers create new job opportunities
    2. Computers eliminate many jobs
    3. Computers cause unemployment
    4. Need for retraining of work force

III. Activities

A. Teacher
    1. Lecture
    2. Discussion
    3. Audio-visual aids
        a. Chalkboard
        b. Examples of personalized junk mail
        c. Filmstrip
    4. Speaker (one who is informed of the effect of computers on business and the lives of the employees)
    5. Assignments
    6. Evaluation
B. Student
    1. Take notes on lecture of the instructor and/or the speaker
    2. Complete worksheets and/or other assigned tasks

3. Complete readings assigned by instructor
4. View and discuss filmstrip
5. Continue adding new vocabulary words to notebook
6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Literacy: Problem-Solving with Computers, Horn/Poirot, pp. 113-120.
2. Computers and Information Processing with Business Applications, O'Leary/Williams, Ch. 1.
3. Computers Today, Sanders, pp. 556-573.
4. Help with Computer Literacy, Atkinson, pp. 92-97.
5. Information Processing, Clark/Lambrecht, pp. 1-14.
6. Learning about Computers, Cathcart/Cathcart, pp. 44-49.
7. Scholastic Computing: An Introduction to Computers, Roberts, pp. 197-219.

Audio-Visual

1. Filmstrip:
   "Society and the Chips," Media Production Co., 1980.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Prepare a list of jobs that no longer exist because of computers, and prepare a list of new jobs created by computers.
2. Prepare a list of ways in which the lives of families and friends have been affected by computers.
3. Visit the local employment agency to get the latest statistics on unemployment and also to get the agency's opinion on what ways computers are contributing to the unemployment figures.
4. Choose a boring job that could be eliminated and write about how that job could be replaced by some computerized means.

Unit Two--How Computers Affect Society

Part D - Concerns arising from computer use

I. Objectives

At the end of this part each student will be able to:

A. State at least five examples of computer crime and suggest what might be done about it
B. Explain the need to safeguard privacy in relation to computer data banks

II. General Content

A. Computer crime
   1. Variety of serious crimes
   2. Limited procedures for detecting computer crimes
   3. Need for security checks
B. Use of data banks
C. Impact on people from lack of security with data banks
   1. Economic loss
   2. Inconvenience
   3. Loss of privacy
      a. EFTS (Electronic Funds Transfer Systems) Surveillance
      b. Mailing lists abuse
      c. Research and census information gathering
      d. Privacy controls
         1) Privacy Act of 1974
         2) State laws

III. Activities

A. Teacher
   1. Lecture
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies
      c. Videotape
   4. Assignments
   5. Evaluation
B. Student
   1. Take notes on lecture
   2. Respond to attitude on ethics test from overhead transparency
   3. Complete worksheets and/or other assignments
   4. Complete readings assigned by instructor
   5. Continue adding new vocabulary words to notebook
   6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 2.17-2.19.
2. Computer Literacy: Problerm Solving with Computers, Horn/Poirot, pp. 95-107.
3. Computers and Information Processing with Business Applications, O'Leary/Williams, Ch. 16.
4. Computers and Information Technology, Daggett et al., pp. 290-297.
5. Computers Today, Sanders pp. 573-579.
6. Help with Computer Literacy, Atkinson, pp. 104-106.
7. Information Processing, Fourth Edition, Bohl, pp. 524-540.
8. Information Processing, Clark/Lambrecht, pp. 14-16.
9. Introduction to Data Processing, Third Edition, Robichaud et al., pp. 332-334.
10. Scholastic Computing: An Introduction to Computers, Roberts, pp. 221-237.

Audio-Visual

1. Overhead Transparency:
   Transparency Masters: Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 204-206.
2. Videotape:
   Nova--"Computers, Spies, and Private Lives," Time Life, 1982.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Collect articles on computer crime and abuse.
2. Survey family and friends on computer ethics as viewed on the overhead transparency. Share with class.
3. Contact local bank representatives to see if they are using EFTS and what safeguards they are using to protect customer privacy. Report to class.
4. Contact local businesses to see if they have experienced any computer crimes and what security steps they have taken to prevent computer crime. Report to class.

5. Collect cartoons about computers. Analyze and discuss in class the concerns about computers expressed by the cartoonists.
6. Find out what data is being collected about students, why that data is being collected, and how that data is being used. Share feelings about this and how this might affect their future lives.

Unit Two--How Computers Affect Society

Part E - Rapid technological changes in business

I. Objectives

At the end of this part each student will be able to:

A. Describe changes brought about by computers in processing information in the modern business office.
B. Describe the use of robotics in industry
C. Project future changes that will occur in business because of the fifth generation of computers

II. General Content

A. Electronic office
    1. Information processing
        a. Data processing
        b. Word processing
    2. Electronic mail
        a. Paperless office
B. Computerized factories
    1. Robotics
C. Supercomputers of the future
    1. Fifth generation computers
        a. Super chips
        b. Speed
    2. Artificial intelligence
    3. Voice recognition
    4. Interactive television
        a. Ordering products
        b. Survey/voting

III. Activities

A. Teacher
    1. Lecture
    2. Discussion
    3. Audio-visual aids
        a. Chalkboard
        b. Videotape
        c. Film
    4. Field trip
    5. Assignments
    6. Evaluation
B. Student
    1. Take notes on lecture
    2. View and discuss videotape and/or film
    3. Complete readings assigned by instructor
    4. Complete worksheets and/or other assignments

5. Continue adding new vocabulary words to notebook
6. Participate in field trip to local "electronic" business office to see changes that have occurred and discuss possible future changes
7. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, Ch. 10.
2. Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 2.27-2.31, 7.5-7.9.
3. Computer Literacy: Problem Solving with Computers, Horn/Poirot, pp. 134-139.
4. Computer and Information Processing with Business Applications, O'Leary/Williams, ch. 2, pp 248-251, Ch. 17.
5. Computers and Information Technology, Daggett et al., pp. 281-289.
6. Computers Today, Sanders, Ch. 11, pp. 569-570, 590-600, 646-647.
7. Help with Computer Literacy, Atkinson, pp. 102-104, 107-110.
8. Information Processing, Bohl, pp. 5-8, 18-22, 520-524.
9. Introduction to Computers and Data Processing, Shelly/Cashman, pp. 2.33-2.39.
10. Introduction to Data Processing, Third Edition, Robichaud et al., pp. 323-333.
11. Learning about Computers, Cathcart/Cathcart, pp. 36-37, 47-48.
12. Scholastic Computing: An Introduction to Computers, Roberts, pp. 261-277.

Audio-Visual

1. Videotapes:
   "Data Processing, Control, Design"
   "For Better or for Worse"
   Adventure of the Mind Series, Iowa Public Television, 1984-1985.
2. Film:
   "Computers: Challenging Man's Supremacy," Documents Assoc., 1976.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Survey the business community and list the different functions robots are performing.
2. Write a report on how robots and humans are alike and how they differ.
3. Write a story about what it will be like for a teenager to live in the year 2000.
4. Interview a person working in a computer-related office job. Report to the class on the employee's level of job satisfaction in an "electronic" office.
5. As a final project on this unit, have students write a short essay that states their attitudes about computers, especially expressing what they do and do not value about technology.

Unit Three--HOW COMPUTERS WORK

I. Objectives

At the end of this unit each student will be able to:

A. Name the components of a computer system
B. Explain the function of the central processing unit
C. Describe input/output devices
D. Describe networks
E. Explain differences between a calculator and a computer
F. Explain differences between decimal and binary numbers
G. Describe how computers are classified and how each has been developed for a special purpose
H. Discuss changes which have taken place in computer development
I. Describe the difference between hardware and software

II. General Content

A. Components of a computer system
B. Binary code
C. Kinds of computers
D. Differences between hardware and software

III. Activities

A. Teacher
   1. Lecture and demonstration through exercises on the computer
   2. Discussion
   3. Audio-Visual aids
      a. Chalkboard
      b. Overhead Transparencies
   4. Assignments
   5. Evaluation

B. Student
   1. Operate microcomputer to perform direct arithmetic problems
   2. Complete readings assigned by instructor
   3. Complete worksheets and/or handouts from instructor
   4. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Business Data Processing, Burian/Fink, Prentice-Hall, Inc., 1982.
2. Computer Literacy - Concepts and Applications, Trainor, Mitchell Publishing Co., 1984.
3. Computers and Information Processing with Business Applications, O'Leary/Williams, The Benjamin/ Cummings Publishing Co., Inc., 1985.
4. Computers and Information Technology, Daggett/ Badrkhan/Kruse, South-Western Publishing Co., 1985.
5. Computers Today, Sanders, McGraw-Hill Book Co., 1983.
6. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985.
7. Introduction to Data Processing, Robichaud/ Muscat/Hall, McGraw-Hill Book Co., 1983.
8. Microcomputer Literacy Program, Vol. 1, McGraw-Hill Book Co., 1982.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching BASIC Programming, Spencer, Camelot Publishing Co., 1978.
2. Software:
   Three R's of Microcomputing, MECC, AEA Micro Duplication Services, State of Iowa.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit Three--How Computers Work

Part A - Components of a computer system

I. Objectives

At the end of this part each student will be able to:

A. Name the components of a computer system
B. Explain the function of the central processing unit
C. Describe input/output devices
D. Describe networks

II. General Content

A. Central processing unit
    1. "Instruction Set" for the computer
    2. CPU has two main parts (electric circuits)
        a. Arithmetic-logic unit (ALU)
        b. Control unit
            1) Accumulator
            2) Buffer register
            3) Data counter
            4) Program counter
            5) Instruction register

B. Memory
    1. ROM (read-only memory)
        a. "Bootstrap Loader" programs
        b. Additional ROM
            1) Special internal operations
            2) Special operating languages
            3) Special operational enhancements
            4) Special applications programs
    2. RAM (random access memory)
        a. Main memory
        b. Volatile memory
        c. Memory locations
        d. Larger ROM's in the CPU

C. Control (Bus)
    1. Wiring schemes for a computer
    2. Expansion/change/repair

D. Input devices
    1. Keyboards
        a. Attached - hardwired
        b. Detached - non hardwired
        c. Ten-key pads
        d. Mouse pads
        e. Joystick
        f. Light pen
        g. Digitizer tablet
        h. Monitoring devices - used in process controls

2. Punch cards
3. Tape
    a. Paper
    b. Magnetic
4. Disk drives
    a. Floppy disk
        1) 8 inch
        2) 5 1/4 inch
        3) 3 1/2 inch
    b. Hard disk
        1) Fixed
        2) Removable
        3) Bubble
5. Readers and scanners
6. Pushbutton phones
7. Voice

E. Output devices
1. Display screen
2. Printers
    a. Image
        1) Dot-matrix
        2) Daisy wheel
        3) Thermal
    b. Speed
    c. Method
        1) Printed
            a) Impact
            b) Non-impact
                (1) Heat
                (2) Electric impulses
                (3) Ink jets
                (4) Xerography
                (5) Laser
            c) Graphic
                (1) Graphic printers
                (2) Plotters - line
            d) Microfiche

F. Networks
1. Types
    a. Local area network systems (LANDS)
    b. Private branch exchange (PBX)
2. Arrangements
    a. Star network
    b. Ring network
    c. Hierarchical network
3. Transmission methods
    a. Videotex
    b. Telecommunications
    c. Teleprocessing
4. Transmission equipment
    a. Modem
        1) Bau rate
        2) Simplex

3) Half-duplex
4) Full-duplex

b. Wire cable
1) Analog signal
2) Digital signals

c. Microwave

d. Fiber optics

III. Activities

A. Teacher

1. Lecture and demonstration through exercises on the computer
2. Discussion
3. Audio-visual aids
   a. Chalkboard
   b. Overhead transparencies
4. Assignments
5. Evaluation

B. Student

1. Operate microcomputer
2. Complete readings assigned by instructor
3. Complete worksheets and/or handouts from instructor
4. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Business Data Processing, Burian/Fink, pp. 31-45, 107-128.
2. Computer Literacy - Concepts and Applications, Trainor, pp. 17-41, 80-95, 144-147, 336-345, Appendix E.
3. Computers and Information Processing with Business Applications, O'Leary/Williams, pp. 203-343.
4. Computers and Information Technology, Daggett/Badrkhan/Kruse, pp. 147-154.
5. Computers Today, Sanders, pp. 105-263.
6. Information Processing - Concepts, Principles, and Procedures, Clark/Lambrecht, pp. 27, 79-104.
7. Microcomputer Literacy Program, Vol. 1, McGraw-Hill Book Co., Part II.

Audio-Visual

1. Overhead Transparency:
   Visual masters for Teaching BASIC Programming, Spencer
2. Software:
   Three R's of Microcomputing, MECC

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit Three--How Computers Work

Part B - Binary code

I. Objectives

At the end of this part each student will be able to:

A. Explain differences between a calculator and a computer
B. Explain differences between decimal and binary numbers

II. General Content

A. Binary code
   1. Decimal numbers
      a. Position notation
   2. Binary numbers
      a. Position notation
      b. Conversion involving binary numbers
   3. The hexadecimal system
      a. Conversions involving hexadecimal numbers
      b. Position notation
   4. Bit
   5. Bytes
   6. Memory (definition of "K")

III. Activities

A. Teacher
   1. Lecture and demonstration through exercises on the computer
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies
   4. Assignments
   5. Evaluation
B. Student
   1. Operate microcomputer to perform direct arithmetic problems
   2. Complete readings assigned by instructor
   3. Complete worksheets and/or handouts from instructor
   4. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Business Data Processing, Burian/Fink, pp 27-30, 108, 110, 113-117, 124-128, 165-166, 195-196, 260.
2. Computer Literacy - Concepts and Applications, Trainor, pp 29, 47, 61, 87-97, 115-116.
3. Computers and Information Technology, Daggett et al., pp 168-169, 192, 273-275, 300.
4. Computers Today, Sanders, pp 38, 115, 118-119.
6. Information Processing, Clark/Lambrecht, pp 34, 36-37, 48-55.

Audio-Visual

1. Overhead Transparency:
   Visual Masters for Teaching BASIC Programming, Spencer.
2. Software:
   Three R's of Microcomputing, MECC.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit Three--How Computers Work

Part C - Kinds of computer systems

I. Objectives

At the end of this part each student will be able to:

A. State how computers are classified and describe how each has been developed for a special purpose

II. General Content

A. Kinds of computers
   1. Microcomputers
      a. Cost
      b. Structure (Bit)
      c. RAM capacity
      d. I/O devices
      e. Programming language level
      f. Applications level
   2. Minicomputers
      a. Cost
      b. Structure (Bit)
      c. RAM capacity
      d. I/O devices
      e. Programming language level
      f. Applications level
   3. Mainframe
      a. Cost
      b. Structure (Bit)
      c. RAM capacity
      d. I/O devices
      e. Programming language level
      f. Applications level
   4. Super computers
      a. Cost
      b. Structure (Bit)
      c. RAM capacity
      d. I/O devices
      e. Programming language level
      f. Applications level
   5. Digital/analog computers

III. Activities

A. Teacher
   1. Lecture and demonstration through exercises on the computer
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies

4. Assignments
5. Evaluation

B. Student
1. Operate microcomputer to perform direct arithmetic problems
2. Complete readings assigned by instructor
3. Complete worksheets and/or handouts from instructor
4. Complete evaluation procedures chosen by instructor

IV. Resources

Text

1. Computers Today, Sanders, pp. 235-256.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching BASIC Programming, Spencer.
2. Software:
   Three R's of Microcomputing, MECC.

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets

Unit Three--How Computers Work

Part D - Difference between hardware and software

I. Objectives

At the end of this part each student will be able to:

A. Discuss changes which have taken place in computer development during the last forty years
B. Describe the difference between hardware and software

II. General Content

A. Hardware vs. software
   1. Growth since 1940
   2. Decrease in size and cost
   3. Increased memory capacity
   4. Effect of technology on hardware development
   5. Effect of technology on software development

III. Activities

A. Teacher
   1. Lecture and demonstration through exercises on the computer
   2. Discussion
   3. Audio-visual aids
      a. Chalkboard
      b. Overhead transparencies
   4. Assignments
   5. Evaluation
B. Student
   1. Complete readings assigned by instructor
   2. Complete worksheets and/or handouts from instructor
   3. Complete evaluation procedures chosen by instructor

IV. Resources

Text

1. Computers Today, Sanders, pp. 626-644.

Audio-Visual

1. Overhead Transparency:
   Visual Masters for Teaching BASIC Programming, Spencer.
2. Software:
   Three R's of Microcomputing, MECC.

Unit Four--HOW TO USE COMPUTERS

I. Objectives

At the end of this unit each student will be able to:

A. Demonstrate how to turn on, boot, and operate the computer
B. Demonstrate how to load, list, and run programs
C. Be familiar with the special keys on the microcomputer
D. Analyze and solve a problem through flowcharting
E. List advantages and disadvantages of the BASIC language
F. Write and execute programs coded in BASIC language
G. Recognize major computer languages
H. Demonstrate how to load and run computer software applications for personal and business use
I. Be able to define the new specialized terms used in this unit

II. General Content

A. Operation of a computer system
B. Analyzing and solving a problem through flowcharting
C. Writing and executing simple problems in BASIC language
D. Introduction to other languages
E. Software applications

III. Activities

A. Teacher
   1. Lecture
   2. Overhead transparencies
   3. Demonstration
   4. Chalkboard
   5. Filmstrip
   6. Evaluation

B. Student
   1. Read and study textbook assignments
   2. Read and study handouts
   3. Operate microcomputer
   4. Prepare flowcharts for selected problems
   5. Solve selected problems by using BASIC language
      a. Using pencil and paper
      b. Using microcomputer
   6. View and discuss filmstrip
   7. Write simple program in COBOL under teacher direction
   8. View and discuss videotape
   9. View and discuss film

IV. Resources

Texts

1. BASIC--A Hands-On Method, Second Edition, Peckham, McGraw-Hill Book Co., 1981.
2. Business Data Processing, Second Edition, Burian/Fink, Prentice-Hall, Inc., 1982.
3. Computer Fundamentals for an Information Age, Shelly/Cashman, Anaheim Publishing Co., Inc., 1984.
4. Computer Literacy for Office Education, Iowa Office Education Coordinators Association, October, 1982.
5. Computer Literacy Problem-Solving with Computers, Horn/Poirot, Sterling Swift Publishing Co., 1981.
6. Computers in Action, Second Edition, Spencer, Hayden Book Co., Inc., 1978.
7. Data Processing, An Introduction, Adams, Delmar Publishers Inc., 1982.
8. Flowcharting, McQuigg/Harness, Houghton Mifflin Co., 1977.
9. Fundamentals of Data Processing, Second Edition, Wanous/Wagner/Lambrecht, South-Western Publishing Co., 1981.
10. Help with Computer Literacy, Atkinson, Houghton Mifflin Co., 1984.
11. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985.
12. Introduction to Computers and Data Processing, Shelly/Cashman, Anaheim Publishing Co., Inc., 1984.
13. Introduction to Data Processing, Third Edition, Robichaud/Muscat/Hall, McGraw-Hill Book Co., 1983.
14. Microcomputers: Hardware, Software, and Programming, Coburn, Bobbs-Merrill Co., Inc., 1983.
15. Operators Manual, for equipment used.
16. Scholastic Computing--An Introduction to Computers, Roberts, Scholastic, Inc., 1984.
17. Structured Basic, Clark/Drum, South-Western Publishing Co., 1983.

Audio-Visual

1. Overhead Transparencies:
   Introduction to Computers and Data Processing, Transparency Masters, Shelly/Cashman, Anaheim Publishing Co., 1980.
   Introduction to Data Processing, Third Edition, Source Book and Key, Robichaud/Muscat/Hall, McGraw-Hill Book Co., 1983.

Visual Masters for Teaching Basic Programming, Spencer, Camelot Publishing Co., 1978.

2. Tape:

Microcomputer Literacy Program for Executives, Managers, and Professionals, Vols. 1 & 2, McGraw Hill, Inc., 1982

Other

1. Manual:
Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985.

Unit Four--How to use Computers

Part A - Operation of a computer system

I. Objectives

At the end of this part each student will be able to:

A. Demonstrate how to turn on, boot, and operate the computer
B. Demonstrate how to load, list, and run programs
C. Be familiar with the special keys on the microcomputer

II. General Content

A. Getting to know your system
   1. Microcomputer
   2. Monitor
   3. Disk drive
   4. Printer
B. Special keys
   1. Control key
   2. Reset key
   3. Shift key
   4. Return key
   5. Arrow or cursor keys
   6. Space bar
   7. Zero and letter O keys
   8. One and letter l keys
C. Troubleshooting
   1. How to correct a wrong character
   2. How to erase an entire line
   3. How to stop printer while printing
   4. How to stop the program
   5. How to erase the screen
   6. How to respond to common error messages
      a. Syntax error
      b. I/O error
      c. File not found
      d. Language not available
      e. Break in line xxx
D. Shutting down the system
   1. Removal of diskettes
   2. Turn off printer
   3. Turn off monitor
   4. Turn off microcomputer
E. Care of diskettes
   1. Magnetic fields
   2. Extreme temperatures
   3. Storage envelopes
   4. Exposed surface
   5. How to label

III. Activities

A. Teacher
   1. Lecture from operator's manual
      a. Prepare student handout from our operator's manual
   2. Use overhead projector
      a. Prepare transparencies of microcomputer and diskette
   3. Demonstrations at the microcomputer
   4. Chalkboard

B. Student
   1. Read and study handout
   2. Operate the computer system
      a. Turn equipment on
      b. Boot system
      c. Turn equipment off

IV. Resources

Text

1. Operator's Manual, For equipment used.

Unit Four--How to use Computers

Part B - Analyze and solve a problem through flowcharting

I. Objectives

At the end of this part each student will be able to:

A. Analyze and solve a problem through flowcharting
B. Be able to define the new specialized terms used in this unit

II. General Content

A. Template
   1. Basic systems flowchart symbols
      a. Input/output
      b. Process
      c. On-page connector
      d. Off-page connector
      e. Arrowheads and flowlines
      f. Annotation
B. Specialized systems flowchart symbols
   1. Document
   2. Sort
   3. Keying
   4. Off-line storage
   5. Merge
   6. Manual operation
   7. Punched card
   8. Card file
   9. Extract
   10. Magnetic tape
   11. Magnetic disk
   12. Manual input
   13. Display
   14. On-line storage
C. Systems flowchart
D. Program flowchart symbols
   1. Start/stop
   2. Read/write
   3. Decision
   4. On-page connector
   5. Off-page connector
   6. Process
E. Simple problem flowchart
   1. Loops
   2. Branches--conditional and unconditional

III. Activities

A. Teacher
   1. Lecture--flowchart symbols and ENGLISH solution to flowcharted problem

2. Chalkboard--flowchart symbols and flowchart problems
3. Overhead transparencies--flowchart symnbols and flowchart problems
4. Prepare handout of flowchart problem
5. Evaluation

B. Student

1. Read and study text
2. Examine a template to see how it is used
3. Prepare systems flowchart under teacher direction
4. Write a simple problem flowchart
5. Write in ENGLISH the solution to a simple flowcharted problem
6. Take test on flowcharting

IV. Resources

Texts

1. Business Data Processing, Second Edition, Burian/Fink, Prentice-Hall, Inc., 1982, pp. 303-327.
2. Computer Literacy for Office Education, Iowa Office Education Coordinators Association, October, 1982, pp. 16-28.
3. Computer Literacy Problem-Solving with Computers, Horn/Poirot, Sterling Swift Publishing Co., 1981, Ch. 11.
4. Computers in Action, Second Edition, Spencer, Hayden Book Company, Inc., 1978, Ch. 6.
5. Data Processing, An Introduction, Adams, Delmar Publishers Inc., 1982, pp. 171, 172, 174.
6. Flowcharting, McQuigg & Harness, Houghton Mifflin Co., 1977.
7. Fundamentals of Data Processing, Second Edition, Wanous/Wagner/Lambrecht, South-Western Publishing Co., 1981, pp. 28-39, 60-63, 76-89, 95, 101-104, 108, 115-116, 129-130, 135, 144-146, 161-163, 206-219.
8. Introduction to Computers and Data Processing, Shelly/Cashman, Anaheim Publishing Company, 1980, Ch. 11.
9. Microcomputers: Hardware, Software, and Programming, Coburn, Bobbs-Merrill Company, Inc., 1983, pp. 29-52.
10. Scholastic Computing--An Introduction to Computers, Roberts, Scholastic, Inc., 1984, pp. 95-97.

Unit Four--How to use Computers

Part C - Write and execute simple problems coded in BASIC language

I. Objectives

At the end of this part each student will be able to:

A. List advantages and disadvantages of the BASIC language
B. Write and execute programs coded in BASIC language
C. Be able to define the new specialized terms used in this unit

II. General Content

A. System commands
   1. NEW
   2. LIST
   3. RUN
   4. SAVE
   5. LOAD
B. Program commands
   1. REM
   2. PRINT
   3. GOTO
   4. IF-THEN
   5. READ
   6. DATA
   7. END
   8. LET
   9. INPUT
   10. FOR-NEXT
   11. CLEAR
   12. GOSUB
C. Arithmetic operators
   1. +
   2. -
   3. *
   4. /
   5. **
D. Parenthesis
E. Types of data
   1. Variable
   2. Constant
F. Data terminator
G. Variable names
   1. Numeric
   2. String
H. Reserved words
I. Equations
J. Loop

K. Branches
   1. Conditional
   2. Unconditional
L. Relational operators
   1. =
   2. < >
   3. <
   4. < =
   5. >
   6. > =
M. Documentation sheet
N. Headings
   1. Main
   2. Secondary
   3. Column
O. Vertical separation of output information
   1. Blank lines
   2. Ruled lines
P. Horizontal placement of output information
   1. Comma
   2. Semi-colon

III. Activities

A. Teacher
   1. Lecture and demonstration
   2. Chalkboard
   3. Overhead transparencies
   4. Filmstrip
   5. Discussion
   6. Evaluation
B. Student
   1. Read and study text
   2. View and discuss filmstrip
   3. Hands-on experience on the microcomputer to write and test simple programs in BASIC
   4. Test

IV. Resources

Texts

1. BASIC--A Hands-on Method, Second Edition, Peckham, McGraw-Hill Book Co., 1981.
2. Business Data Processing, Second Edition, Burian/Fink, Prentice-Hall, Inc., 1982, Ch 17.
3. Computer Literacy for Office Education, Iowa Office Education Coordinators Association, October, 1982, pp. 16-28.
4. Computer Literacy Problem-Solving with Computers, Horn/Poirot, Sterling Swift Publishing Co., 1981, Ch. 13.
5. Computers in Action, Second Edition, Spencer, Hayden Book Company, Inc., 1978, pp. 140-168.

6. Fundamentals of Data Processing, Second Edition, Wanous/Wagner/Lambrecht, South-Western Publishing Co., 1981, Ch. 10 and 11.
7. Help with Computer Literacy, Atkinson, Houghton Mifflin Co., 1984, pp. 66-72.
8. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985, Ch. 13.
9. Microcomputers: Hardware, Software, and Programming, Coburn, Bobbs-Merrill Company, Inc., 1983, pp. 19-20, 25-27, 54-83, 118-140, 172-197, 228-254.
10. Scholastic Computing--An Introduction to Computers, Roberts, Scholastic, Inc., 1984, Ch. 7.
11. Structured Basic, Clark/Drum, South-Western Publishing Co., 1983, Ch. 1-4.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Basic Programming, Spencer, Camelot Publishing Co., 1978. pp. 5, 6, 8, 11-18, 21, 23-25, 29, 30, 32, 33, 36-38, 50, 51, 57, 63.
   Introduction to Computers and Data Processing, Transparency Masters, Shelly/Cashman, Anaheim Publishing Co., 1980, pp. T157-T181.

2. Tapes:
   Microcomputer Literacy Program for Executives, Managers, and Professionals, Vol. 2, McGraw-Hill, Inc., 1982, Topics 1-6.

Other

1. Manual:
   Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985, Suggested test questions pp. 131-134.

Unit Four--How to use Computers

Part D - Introduction to other languages

I. Objectives

At the end of this part each student will be able to:

A. Recognize major computer languages
B. Be able to define the new specialized terms used in this unit

II. General Content

A. COBOL
   1. Advantages and disadvantages
   2. Major divisions
   3. Types of words used
   4. Punctuation rules
   5. COBOL Statements
B. FORTRAN
   1. Characteristics
   2. Applications
C. PASCAL
   1. Characteristics
   2. Applications

III. Activities

A. Teacher
   1. Lecture
   2. Overhead transparencies--Use a COBOL program sheet to show correct COBOL statements
   3. Chalkboard
   4. Prepare handout study sheets to supplement text
B. Student
   1. Read and study textbook assignments
   2. Prepare COBOL statements under teacher direction
   3. Study handout study sheets

IV. Resources

Texts

1. Business Data Processing, Second Edition, Burian/Fink, Prentice-Hall, Inc., 1982, p. 286, Ch. 18 and 19.
2. Computer Fundamentals for an Information Age, Shelly/Cashman, Anaheim Publishing Co., Inc., 1984, Ch. 13.

3. Computers in Action, Second Edition, Spencer, Hayden Book Company, Inc., 1978, pp. 132-136.
4. Fundamentals of Data Processing, Second Edition, Wanous/Wagner/Lambrecht, South-Western Publishing Co., 1981, Ch. 12 and 13.
5. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985, Ch. 14 and 15.
6. Introduction to Computers and Data Processing, Shelly/Cashman, Anaheim Publishing Co., Inc., 1980, pp. 12.4-12.10, 12.15, 12.34-12.35.
7. Introduction to Data Processing, Third Edition, Robichaud/Muscat/Hall, McGraw Hill Book Co., 1983, pp. 135-137.
8. Microcomputers: Hardware, Software, and Programming, Coburn, Bobbs-Merrill Company, Inc., 1983, pp. 17-19, 25-27.

Audio-Visual

1. Tape:
Microcomputer Literacy Program for Executives, Managers, and Professionals, Vol. 1, McGraw-Hill, Inc., 1982, Tape 3.

Unit Four--How to use Computers

Part E - Software applications

I. Objectives

At the end of this part each student will be able to:

A. Demonstrate how to load and run computer software applications for personal and business use
B. Be able to define the new specialized terms used in this unit

II. General Content

A. Word processing
   1. Applications
   2. How to enter data
   3. Editing
      a. Erasing text
      b. Moving text
      c. Inserting text
      d. Search and replace
   4. Printing the document
      a. Formatting text
   5. Spelling checker
   6. Graphics
B. Spreadsheet
   1. Applications
   2. Entering data
      a. Heading
      b. Cells
      c. Cursor
      d. Labels and values
   3. Function commands
C. Data base management
   1. Applications
   2. Format for input
   3. Retrieving information
   4. Output of information
D. CAI, CAD, CAM
   1. Applications
   2. Advantages

III. Activities

A. Teacher
   1. Lecture
   2. Demonstrations on the microcomputer while students watch monitor or TV screen
   3. Prepare handouts for word processing, spreadsheet, and data base management
   4. Show videotape

B. Student
   1. Read and study textbook material
   2. View and discuss videotape
   3. Study handout materials

IV. Resources

Texts

1. Computer Fundamentals for an Information Age, Shelly/Cashman, Anaheim Publishing Co., Inc., 1984, Ch. 10, 12.
2. Microcomputers: Hardware, Software, and Programming, Coburn, Bobbs-Merrill Co., Inc., 1983, pp. 282-286, 304-306.
3. Scholastic Computing--An Introduction to Computers, Roberts, Scholastic Inc., 1984, pp. 28, 139-164, 173-193, 199.

Audio-Visual

1. Tape:
   Microcomputer Literacy Program for Executives Managers and Professionals, Vol. 1, McGraw-Hill, Inc., 1982, Tape 3.

Unit Five--Career Opportunities Utilizing Computer Technology

I. Objectives

At the end of this unit each student will be able to:

A. List several careers and vocations utilizing computer technology
B. State the educational requirements for several different computer-related careers

II. General Content

A. Computer careers
   1. Computer operators
      a. Data entry
      b. Word processing
   2. Computer programmers
   3. System analysts
B. Education and career planning for the future
   1. Skills required
   2. Job market opportunities
   3. Courses needed

III. Activities

A. Teacher
   1. Lecture
   2. Discussion
   3. Audio-Visual aids
      a. Overhead transparencies
      b. Chalkboard
      c. Videotape
   4. Speaker on educational requirements for different computer-related jobs and what courses would be helpful at the secondary level
   5. Assignments
   6. Evaluation
B. Student
   1. Take notes on lectures by instructor and/or speaker
   2. Complete readings assigned by instructor
   3. Complete worksheets and/or other assignments
   4. View and discuss videotape
   5. Participate in the session with the speaker on the educational requirements for computer-related jobs
   6. Add new vocabulary words to notebook
   7. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, South-Western Publishing Co., 1982.
2. Computers and Information Processing with Business Applications, O'Leary/Williams, Benjamin/Cummings Publishing Co., Inc., 1985.
3. Computers Today, Sanders, McGraw-Hill Book Co., 1983.
4. Help with Computer Literacy, Atkinson, Houghton Mifflin Co., 1984.
5. Information Processing, Clark/Lambrecht, South-Western Publishing Co., 1985.
6. Introduction to Data Processing, Third Edition, Robichard/Muscat/Hall, McGraw-Hill Book Co., 1983.
7. Scholastic Computing: An Introduction to Computers, Roberts, Scholastic Inc., 1984.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Computers, Spencer, Camelot Publishing Co., 1978.

   Transparency Masters: Computer Fundamentals for an Information Age, Shelly/Cashman, 1984.

2. Video-tape:
   Adventure of the Mind Series, Iowa Public Television, 1984-85. "Data Processing, Control, Design."

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Unit Five--Career Opportunities Utilizing Computer Technology

Part A - Computer Careers

I. Objectives

At the end of this unit each student will be able to:

A. List several careers and vocations utilizing computer technology including a job description, salary range, and educational requirements for each career

II. General Content

A. Computer careers
  1. Computer operators
    a. Data entry
      1) Description
      2) Salary range
      3) Educational requirements
    b. Word processing
      1) Description
      2) Salary range
      3) Educational requirements
  2. Computer programmers
    a. Applications
      1) Description
      2) Salary range
      3) Educational requirements
    b. Systems
      1) Description
      2) Salary range
      3) Educational requirements
  3. Systems analyst
    a. Description
    b. Salary range
    c. Educational requirements

III. Activities

A. Teacher
  1. Lecture
  2. Discussion
  3. Audio-Visual aids
    a. Overhead transparencies
    b. Chalkboard
    c. Videotape
  4. Assignments
  5. Evaluation

B. Student
  1. Take notes on lecture
  2. Complete readings assigned by instructor

3. Complete worksheets and/or other assignments
4. View and discuss videotape
5. Add new vocabulary words to notebook
6. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, Ch. 9.
2. Computers and Information Processing with Business Applications, O'Leary/Williams, pp. 561-569.
3. Computers Today, Sanders, pp. 583-587.
4. Help with Computer Literacy, Atkinson, Ch. 7.
5. Information Processing, Clark/Lambrecht, p. 12, Ch. 16.
6. Introduction to Data Processing, Third Edition, Robichard/Muscat/Hall, pp. 335-340.
7. Scholastic Computing: An Introduction to Computers, Roberts, pp. 241-259.

Audio-Visual

1. Overhead Transparencies:
   Visual Masters for Teaching Computers, Spencer, p. 63.
   Transparency Masters: Computer Fundamentals for an Information Age, Shelly/Cashman, pp. 201,202.
2. Videotape:
   Adventure of the Mind Series, Iowa Public Television, "Data Processing, Control, Design."

Other

1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Compile a list of computer-related careers listing a short job description, salary range, and educational requirements for each one.
2. Choose one of the above careers and write in more detail what a person would do in that job, what the beginning salary would be, and why this would be an interesting career.

Unit Five--Career Opportunities Utilizing Computer Technology

Part B - Education and Career Planning for the Future

I. Objectives

At the end of this unit each student will be able to:

A. State the educational requirements for several different computer-related careers and how that education would be acquired.

II. General Content

A. Education and career planning for the future
   1. Skills required
   2. Job market opportunities
   3. Courses needed

III. Activities

A. Teacher
   1. Discussion
   2. Speaker on educational requirements for different computer-related jobs and what courses should be taken at the secondary level
   3. Assignments
   4. Evaluation

B. Student
   1. Participate in discussion with the speaker on what courses are needed at the secondary level to plan for a computer-related career
   2. Complete worksheets and/or other assignments
   3. Complete the vocabulary notebook
   4. Complete evaluation procedures chosen by instructor

IV. Resources

Texts

1. Computer Awareness, Wood, Ch. 9.
2. Help with Computer Literacy, Atkinson, Ch. 7.
3. Information Processing, Clark/Lambrecht, Ch. 16.
5. Scholastic Computing: An Introduction to Computers, Roberts, pp. 241-259.

Other
1. Teacher prepared computer vocabulary
2. Teacher prepared worksheets and/or handouts

Suggested student assignments

1. Collect news articles about employment, unemployment, and trends in the job market for the 1980s.
2. Collect all computer-related occupations described in Help Wanted ads of local and other available newspapers.
3. Visit a vocational counselor for information on how to choose a career and how to get a job.
4. Visit a Personnel Director of some local business or institution for information on job opportunities in the local community.

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Peckham, Herbert D., Basic A Hands-On Method, Second Edition, McGraw-Hill Book Co., New York, NY, 1981.

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Spencer, Donald D., Computers in Action, Second Edition, Hayden Book Co., Inc., Rochelle Park, NJ, 1978.

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Trainor, Timothy N., Computer Literacy - Concepts and Applications, Mitchell Publishing Co., Santa Cruz, CA, 1984.

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Adventure of the Mind Series, Iowa Public Television, 1984-85.
"Data Processing Control Design"
"For Better or For Worse"

Nova, Time Life, 1982.
"Artists in the Lab"
"Computers, Spies, and Private Lives"

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Cashman, Thomas J. and Gary D. Shelly, Transparency Masters: Computer Fundamentals for an Information Age, Anaheim Publishing Co., Fullerton, CA, 1984.

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